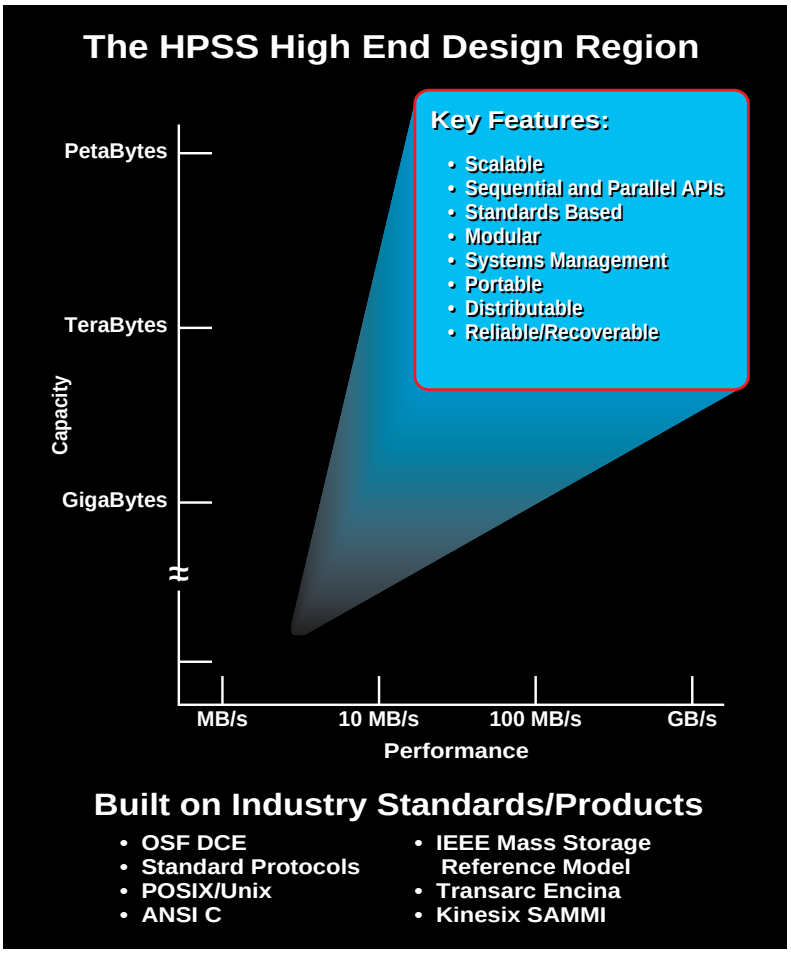
National Storage Laboratory (NSL)

A DOE laboratory/industry/university collaboration to investigate, demonstrate, and commercialize high-performance hardware and software storage technologies

Large scientific, commercial, and digital library applications are straining storage and networking facilities, a condition compounded by new supercomputers, massively parallel processors, and high-performance workstations. Today's storage systems can move 1 to 10 million bytes of information per second, but current needs call for systems that can move data at 100 million bytes per second. Future needs will almost certainly reach 500 million to 1 billion bytes per second.



APPLICATIONS

- *Remove network computing bottlenecks*
- *Provide new functionality to storage systems*

Collaborators

No single company, government laboratory, or research organization has the ability to confront all of the system-level issues that must be resolved in order to produce required advancements in storage systems technology. The NSL collaboration was launched in 1992 at LLNL with six interested private companies. Within one year the NSL had grown into a major DOE laboratory/industry/university collaboration with work being carried out at many locations, producing products useful to both government and industry.

NSL objectives

Technical: Develop, test, and evaluate general purpose, high-performance, distributed storage architectures; develop and demonstrate new storage-system functionality to meet high-performance computing challenges.

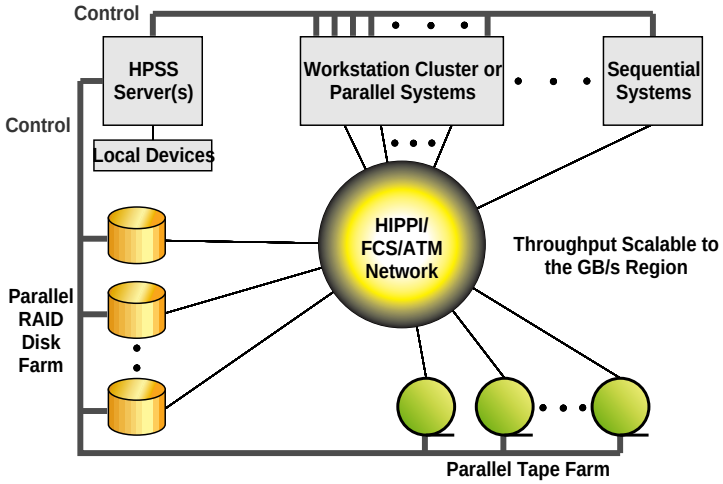
Commercial: Integrate specific hardware and software from multiple vendors; facilitate commercial availability of testbed hardware and software; evaluate and influence emerging national storage-system standards.

Milestones

NSL-UniTree — The first product of the NSL is NSL-UniTree, a software system featuring network-attached storage-devices, dynamic storage hierarchies, layered access to storage-system services, and extensive storage-system management capabilities. A commercial version of this system was announced late in 1992 by IBM Government Systems and is in use at various sites around the country, including at LLNL.

High-Performance Storage System (HPSS) — The second product of the NSL is HPSS, a scalable, next-generation storage system that will meet the functionality and performance requirements of large-scale scientific and commercial computing environments by moving large data files sequentially or in parallel between storage devices and parallel computers or workstation clusters at speeds 100 to 500 times faster than today's commercial systems.

System Architecture Supported by HPSS



Availability: The NSL CRADA ended June 1, 1995. However, the collaboration continues to develop and commercialize HPSS. We also continue to explore the integration of large-scale data management and mass storage. We invite interested organizations to contact us.

Contact

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